DOCUMENT RESUME

ED 295 155 CS 211 245

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TITLE Collaborative Revision on a Computer.
PUB DATE Mar 88
NOTE 27p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (39th, St. Louis, MO, March 17-19, 1988).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Computer Uses in Education; Higher Education; *Literature; *Revision (Written Composition); *Word Processing; *Writing Across the Curriculum; *Writing Improvement; Writing Processes; Writing Research; Writing Skills
IDENTIFIERS *Collaborative Writing; Writing Attitudes

ABSTRACT

A study investigated the effects of using a computer image projected on a large screen to teach revision to college students. Subjects, 19 students at DePauw University, enrolled in a writing intensive literature course in a Writing across the Curriculum program, were divided into test and control groups. It was hypothesized that the modeling of collaborative revision on the computer in the classroom would lead to (1) the submission of better student papers; (2) greater changes in the student's writing process, especially a deeper definition of revision; and (3) more positive attitudes toward peer collaboration, than would teaching revision through discussion of a fixed text. Conclusions were reached on the basis of instructors' and blind readers' grades on 114 papers (drafts and revisions), questionnaires on writing attitudes and processes, student self-reports, and classroom observation. Findings revealed that the mean scores of papers for all students increased, but there was no statistically significant difference in mean scores from the test and control groups. Although it was impossible to determine the effect of the computer revision sessions upon attitudes toward peer collaboration, the survey and observations suggested that the use of the computer in the classroom helped students improve their writing, raised their consciousness about the composing process, and helped them develop a more radical definition of revision, than the use of a fixed text. (ARH)

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Collaborative Revision on a Computer

Cynthia Cornell and Robert Newton

DePauw University

May 10, 1988

CS211245

We wish to acknowledge the help of the following colleagues: Kathleen Steele, who served as outside reader of students drafts; Jack Wright and Richard Kelly of the Bureau of Testing and Research, who assisted us in design of the experiment and interpretation of the results; and David Klooster, who made valuable suggestions for revision.

ABSTRACT

Collaborative Revision on a Computer

Cynthia Cornell and Robert Newton

(Presented at CCCC annual meeting, Saint Louis, Missouri
March 19, 1988)

Our study explored the effects of using a computer image projected on a large screen to teach revision. Our experimental class was a writing intensive literature course in a WAC program. The goal of revision was to foster the rethinking of students' understanding of literary texts: to help students to see their drafts as fluid and modifiable and to see revision as creative.

Dividing the 19 students into test and control groups, we tested three hypotheses: that the modelling of collaborative revision on the computer in the classroom leads to (1) the submission of better student papers, (2) greater changes in the student's writing process, especially a deeper definition of revision, and (3) more positive attitudes toward peer collaborationm, than teaching revision through discussion of a fixed text. We drew our conclusions from instructor's and blind reader's grades on 114 papers (drafts and revisions), questionnaires on writing attitudes and processes, student self reports, and classroom observation.

The mean scores of papers for all students increased but there was no statistically significant difference in mean scores from the test (computer) and control groups. Although we could not determine the effect of the computer revision sessions upon attitudes toward peer collaboration, our survey and observations suggested that our use of the computer in the classroom helped students (1) improve more in their writing, (2) raise their consciousness about the composing process more, and (3) develop a more radical definition of revision, than the use of a fixed text.

Cynthia Cornell

Collaborative Revision
on a Computer

We want to report to you, today, on our pilot experiment in using the computer in the classroom to teach revision. Last fall, in our Introduction to Fiction class, we used some of the newest computer technology to model thinking and revising strategies for the writing of literary analysis, and we designed the class so that we could do some preliminary tests and explorations of the effectiveness of this teaching method. Our report will fall into three parts: an explanation of the goals of our teaching of revision in this class, a description and demonstration of the technology, and a much abbreviated description of our experiment and its results.

Our experimental class was a writing-intensive literature course in DePauw's writing across the curriculum program, and we wanted our emphasis on revision to achieve five goals in thinking and writing relevant to this course. (See Appendix: Visual #1) We wanted to encourage students to rethink their understandings of works we had read and to discover, in their first writings about them, the seeds of a fuller or different understanding. To do this, we needed first to liberate our students from their drafts. We needed an effective way to help them see their own texts as fluid and modifiable rather than frozen and permanent, so that they would begin to see revision as a creative process in thinking and writing. In other words, we hoped to lead our students to a redefinition of revision as a potentially radical reforming of meaning rather than a tinkering with surface. In addition, we wanted our emphasis on collaborative, classroom revision of students' texts to help students feel they had joined a community of writers about literature who share goals and conventions and a willingness to build on one another's perceptions. Finally, we hoped that revision would raise students' consciousness about their composing processes and lead to productive changes in these processes.

The technology we used was a laptop computer (Zenith) and a Kodak Datashow projector. With these tools, we were able to project a computer image of a student paper on a large screen and, using word processing, alter it quickly and easily.

Our pilot work with this technology has shown us that it is a useful and flexible tool but not yet the perfect one for achieving our goals. It shares some of the often noted limitations of computer aided instruction in writing. For one thing, if you are going to use computers to teach writing, you need computer competence in students and teachers as well as equipment, both of which can be expensive in time and money. For another thing, because you can focus on only as much of the text as can fit on a screen, it is difficult to get a sense of the relation between a part and the whole, unless you have a hard copy of the text in hand, too. As a result, there is a natural tendency to focus on surface and local changes rather than deep

structure and global ones. It is significant, by the way, that this tendency directly obstructs the achieving of the radical revision of texts that was one of the particular goals of this class.

But portable computer projection technology does have some obvious advantages over teaching tools like transparencies and photocopies or computer programs like Writer's Workbench, Grammatik, or even more elaborate arrangements like local networks. (See Appendix: Visual #2) It dramatically illustrates the idea of a fluid and modifiable text. It is far less expensive than computer networks, does not require students to be competent in word processing, and is flexible in that it can be adapted to the particular interests and goals of an instructor. With this tool, you don't have to buy someone else's agenda for teaching writing. In addition, it draws the class together and creates a powerful visual impression. Finally, if you can use it to help your students resist that natural tendency to make surface and local changes rather than deep structure and global ones, it can alter their understanding of revision itself.

Let us take a few minutes to show you what a revising session using this technology might accomplish.

DEMONSTRATION

To model our technique, we have chosen an example from a current philosophy of religion course, in which we are now using it. We have chosen a succinct, one-paragraph student text, amenable to very brief discussion. You need to know something about the topic in order to understand the revision session. The students were asked to write one or two paragraphs expressing the gist of a complicated article by a contemporary British analytic philosopher, R. B. Braithwaite, dealing with the moral meaning of religious assertion. The purpose of the revision session was to help them clarify their understanding of his thinking and hence to clarify their writing about it.

Let's look at the student gist which was the subject of our revision.

Visual #3: Original Text

"<A>Religious assertions may be compared to moral assertions. <B>A religious assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action. <D>The difference between a religious assertion and a moral assertion is connection to a story. <E>The incidents are not as important as the rule or policy governing

the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy."

We explained that in this revision session, we were concerned to express Braithwaite's thought clearly and accurately. We observed that although this draft was a good first effort it needed rethinking. We reminded the class that we were not editing mechanics or style and asked for their suggestions.

A student commented that the paragraph was not clear because too many things were going on in it. On the one hand, the writer was comparing religious assertions with moral assertions. On the other hand, he was describing religious assertions themselves. Someone suggested regrouping sentences around each of these points, bringing sentence <D> up to follow <A>, the topic sentence of the paragraph.

Visual #4: First Revision

"A>Religious assertions may be compared to moral assertions. <D>The difference between a religious assertion and a moral assertion is connection to a story. <B>A religious assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy."

A student observed that this move made the paragraph better in one way but worse in another. Now <D> carried forward the thought of the topic of the paragraph, but it was separated from <E> and <F> which explained it. <D> <E> and <F> should stay together. So we made our second change.

Visual 5: Second Revision

"A>Religious assertions may be compared to moral assertions. <D>The difference between a religious assertion and a moral assertion is connection to a story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy. <B>A religious assertion is an expressed intention to act in accordance with some general policy of

action. <C>One holding a religious belief must act in the specified way even though not capable of the action."

We remarked that we had collected sentences that belong together but there were still problems. The paragraph began by distinguishing religious assertions from moral assertions, a distinction which was misleading because it suggested two different kinds of assertions, whereas Braithwaite thought that religious assertions were a subcategory of moral assertions. A student suggested that we should combine <A> and <D> to state that "Religious assertions are a type of moral assertions; namely, those connected to a story. . . ." And another said that we should add "sacred" before "story" to indicate that Braithwaite was thinking about stories which hold authority or power over the believer.

Visual #6: Third Revision

"<A>+<D>Religious assertions are a type of moral assertions; namely, those connected to a sacred story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy. <B>A religious assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action."

A student observed that the first sentence <A>+<D> starts in the direction of moral assertion but alters its direction to sacred stories. Therefore, another student suggested that in order to emphasize the true direction of the paragraph we make "type of moral assertions" into a modifying phrase.

Visual #7: Fourth Revision

"<A>+<D>Religious assertions, a type of moral assertions, are those connected to a sacred story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy. <B>A religious assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action."

Some students were still bothered by <B> and <C> at the end. What was being said was not distinctive of religious assertions specifically but of moral assertions generally. Someone

suggested that <B> and <C> should be changed into statements about **moral** assertions, pulled out, and put ahead of the paragraph we were working on. They then become the core of a preliminary paragraph.

Display #8: Fifth Revision

"<B>A moral assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a moral belief must act in the specified way even though not capable of the action.

<A>+<D>Religious assertions, a type of moral assertions, are those connected to a sacred story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy."

At this point someone suggested that the writer go back to the word processor and work on the new paragraph, particularly on the mystifying assertion that one may be obligated to act even if one is incapable of so acting.

We ended our session by summarizing what we had done: corrected statements to more accurately reflect the philosopher's views; achieved better organization in the problem paragraph; and suggested ways in which the gist as a whole might be more clearly structured and more fully developed. We urged the students to keep these concerns in mind as they revised their drafts.

END OF DEMONSTRATION

Using this computer-projection technology, we designed an experiment in teaching revision that we hoped could give us some insight about its effectiveness as a teaching tool. We were most interested in investigating the following hypotheses:

The modelling of collaborative revision on the computer in the classroom leads to

1. the submission of better student papers,

2. greater changes in the student's writing process, and especially a deeper definition of revision,

3. more positive attitudes toward peer cooperation and collaboration

than teaching revision through the discussion of a fixed text.

(See Appendix: Visual #9)

For our experiment, we divided the class into a control and an experimental (or computer) group. The groups met together and went through an identical process, except for their three one-hour revision sessions. In preparation for these sessions, both groups read three photocopied papers written by members of their own group and were directed to comment on the same kinds of thinking-writing issues we would address in the revision sessions: focus, organization, clarity, development, and validity of evidence. They were to ignore issues of mechanics and style. The revision sessions themselves differed only in the papers to be evaluated and the teaching tool used. The control group focussed on a fixed text projected through transparencies, while the experimental group focussed on and altered the computer generated text, projected through DATASHOW.

The data we gathered, from which we hoped to draw conclusions, were six-fold 1) instructor's and outside reader's grades on six papers submitted by each of our nineteen students, three first and three second submissions; 2) beginning and ending questionnaires on writing attitudes and processes; 3) student self-reports on changes in their writing processes and their attitudes toward revision; 4) information about academic aptitudes, performance, learning styles and cognitive and affective personality profiles; 5) anonymous course evaluations; and 6) our observations of revision sessions. (See Appendix: Visual #10) Our method was to compare the experimental group with the control group in terms of beginning and ending performance and attitudes and in terms of group dynamics; and to compare each group at the end of the course with itself at the beginning.

The class, as a whole, was enthusiastic and hard-working; there was a strongly positive classroom spirit and energetic involvement by almost every student. According to the statistical evidence, the students made steady and significant improvement in their writing. They also appear to have become more self-conscious about their writing processes and more confident. By the end of the semester, their attitudes toward the course itself were universally positive. On their anonymous evaluations, they judged it to be significantly above our university's means on all six criteria for evaluation, and they frequently commented on their improvement in writing and on the usefulness of our emphasis on revision. In short, the class went very well, and we attribute that in part to the energy we generated in making this an experimental course.

Nevertheless, this pilot study has not adequately tested our three hypotheses. As we designed our experiment, we were aware, of course, that with small test and control groups, we would have

difficulty coming up with statistically significant data. We were also aware that to create a valid test situation we would need to control all controllable factors that might contaminate the results. But as we planned this experimental course we found ourselves reluctant to give up certain practices that have always been important to us in our teaching of it, and because of this, we ended with invalid test and control groups and a variety of contaminating factors. (See Appendix: Visual #11)

For example, we were unwilling to give up writing our own comments and suggestions for revision on individual student papers, making it impossible to isolate the group revision sessions as the cause for student improvement. We were unwilling to give up the practice of providing a critique session for every student in the class, thus creating a situation in which the quality of the revision sessions depended in large part on the student papers up for revision that day. We were unwilling to give up six hours of class time to revision sessions, so our scheduling of the computer revision sessions after class in the late afternoon created two problems, second session doldrums and unbalanced groups, formed neither by random selection nor by matching of characteristics, but instead by the constraints of students' schedules.

Because of these contaminating factors, we have very few statistically significant results to report. Our data show that the mean scores of papers from all students increased but that there is no significant difference in the mean scores of papers from the computer and control groups. (See Appendix: Visual #12) We can say at this point that the modelling of collaborative revision on the computer is an effective technique for helping students improve their writing. But we cannot say it is a better technique than the use of a fixed text.

But we do have data other than hard statistics: the exploratory material from the student surveys, self-reports, and our observations. These provide us with some impressions which encourage further study.

Let's look first at the negative impressions. With this experimental group, we got no encouragement on test question 3: Does the modelling of revision in the classroom lead to more positive attitudes toward peer collaboration? Our data suggest that the control group began the course more disposed than the experimental group to peer cooperation and collaboration and ended the course that way. Students in the control report that they were more inclined to discuss their writing with peers outside class and more inclined to adopt the suggestions and ideas of their classmates than students in the experimental group. But our data also suggest that the reason for this lies less in the use of a

teaching tool than in the personality profiles of the two groups. In addition, it appeared to us that, even though the class as a whole was extroverted and evinced a strong esprit de corps, neither group had much desire to collaborate with others on their writing. Several students in the control group explicitly rejected the suggestions of peers, relying heavily instead on our comments, "since," as one said, "you have the final say in the whole matter anyway." Students in the experimental group, on the other hand, were more likely to reject the help of their peers out a sense of their own individuality.

Our impressions about question 2 are more encouraging. It seems that the modelling of revision with a computer is an effective technique for raising students' consciousness of the elements of the composing process and for leading students to a more radical definition of the revision process. It may also be that it is a better tool for doing these things.

We have the impression that the computer group began as weaker writers than the control group, that they improved more during the semester, and that their improvement was more steady or consistent than that of the control group. (See Appendix: Visual #13) We also have the impression that the experimental group changed more than the control in their intentionality about how to draft a paper, and if this is true, it may help explain this group's more consistent improvement in first submissions across the semester. (See Appendix: Visual #14) The experimental students report that they

1) increased more than the control group in their awareness of the conventions for writing literary analysis,

2) became less likely to start a draft before they had carefully studied their subject, and

3) became more likely to reread and think about the instructions for their writing assignments while they were writing.

Perhaps most important, the computer group appears to have changed more in their practice of revision and in their definition of it than the control group. According to the surveys and our observations of student practice on their revisions, they appear to have become deep rather than surface structure revisers, concerned more with changing the meaning, organization, and supports of their papers than with polishing the surface. The students in the control group, however, continued, throughout the course, to be primarily revisers of style. These impressions of difference between the two groups are supported by their end of semester definitions of revision. A typical definition of

revision from the control group is "clear up your sentences, add detail, and adjust your grammar." A typical definition from the computer group speaks of reexamining and changing meaning, "looking at your paper in a new light." So, we are encouraged to believe that computer projection technology has helped us achieve one of our most important goals: leading our students to see their texts as fluid and radically modifiable.

Let us summarize for you our conclusions, both those that have been validated by the experiment and those which are impressionalistic. As a result of this experimenta, we can say with some assurance that

1. experimental teaching is effective

and

2. modelling of collaborative revision on a computer is an effective method for improving student writing.

As a result of our work with students on this project, we also have the strong impression that the modelling of collaborative revision on the computer in the classroom may help students

1. improve more in their writing of papers;

2. raise their consciousness about the composing process;

and

3. lead to a more radical definition of revision.

As we look back over this experiment, we realize that, in spite of its limitations, our first attempt at classroom research has been productive, stimulating, and surprising. Even though we have dramatized for ourselves what we already knew--that valid conclusions about teaching methods are difficult to obtain--we have been encouraged to continue such research. We have learned how to set up a better experimental situation for this particular project in the use of computers. We have also learned how effective experimental teaching can be for our students. We have been stimulated by unexpected impressions that surfaced in our study; and we may pursue research into these impressions: specifically, about relationships between cognitive and affective personality profiles and academic success, and about relationships among gender, willingness to revise, and response to the use of the computer as a teaching tool. But most important for our presentation today, we have been encouraged to continue our work with portable computer technology--not only because we enjoy using it but because it is effective. As one of our students wrote: "The ability . . . to argue, discuss . . . and revise on the spot--it caused the whole class to participate like it was a

paper written by the class instead of the class telling the author alone what to do. A very valuable tool."

APPENDIX

Visual #1

Goals of Revision Sessions

1. Rethinking of subject
2. Liberation from text
3. Redefinition of revision
4. Joining a community
5. Changing the composing process

Visual #2

Advantages of Portable Computer Technology

1. Illustrates ideal of fluid text
2. Is less expensive
3. Requires no instruction in computer use
4. Adapts to instructor's goals
5. Provides focus for collaboration
6. Creates powerful visual impact
7. Alters definition of revision

Visual #3: Original Text

"<A>Religious assertions may be compared to moral assertions. <B>A religious assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action. <D>The difference between a religious assertion and a moral assertion is connection to a story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy."

Visual #4: First Revision

"<A>Religious assertions may be compared to moral assertions. <D>The difference between a religious assertion and a moral assertion is connection to a story. <B>A religious assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy."

Visual #5: Second Revision

"A>Religious assertions may be compared to moral assertions. <D>The difference between a religious assertion and a moral assertion is connection to a story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy. <B>A religious assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action."

Visual #6: Third Revision

"<A>+<D>Religious assertions are a type of moral assertions; namely, those connected to a sacred story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy. <B>A religious assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action."

Visual #7: Fourth Revision

"<A>+<D>Religious assertions, a type of moral assertions, are those connected to a sacred story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy. <B>A religious assertion is an expressed

intention to act in accordance with some general policy of action. <C>One holding a religious belief must act in the specified way even though not capable of the action."

Visual #8: Fifth Revision

"<B>A moral assertion is an expressed intention to act in accordance with some general policy of action. <C>One holding a moral belief must act in the specified way even though not capable of the action."

"<A>+<D>Religious assertions, a type of moral assertions, are those connected to a sacred story. <E>The incidents are not as important as the rule or policy governing the actions described. <F>Therefore, the actions expected of the religious believer are not the particular actions described in the story but are those actions appropriate to other circumstances and consistent with the general policy."

Visual #9

Experimental Questions

Does the modelling of collaborative revision on the computer in the classroom lead to

1. better student papers?
2. changes in the student's writing process?
3. peer collaboration?

Visual #10

Data Sources

1. Paper scores: instructor and reader
2. Questionnaires at beginning and end
3. Student self-reports
4. Profiles

    Verbal Aptitude

    Academic Achievement

    Learning Style Preferences

Cognitive and Affective Personality Profiles

5. Student course evaluations

6. Instructors' observations

Visual #11

Contaminating factors

1. written comments on student papers

2. lack of common text for critiques

3. limited number of revision sessions

4. second session doldrums

5. unbalanced groups

Visual #12

(See Graph: Both Groups, Both Submissions, Both Readers)

Visual #13

(See Graph: Both Submissions, Both Readers)

Visual #14

(See Graph: First Submissions, Both Readers)

Visual #15

Experimentally Validated Conclusions

1. Experimental teaching is effective.

2. Modelling of collaborative revision on a computer is an effective method for improving student writing.

Impressionistic Conclusions

The modelling of collaborative revision on the computer in the classroom may help students

1. improve more in their writing of papers;
2. raise their consciousness about the composing process;
3. lead to a more radical definition of revision.

Goals of Revision Sessions

1. Rethinking of subject
2. Liberation from text
3. Redefinition of revision
4. Joining a community
5. Changing the composing process

Visual #1

Advantages of Portable
Computer Technology

1. Illustrates ideal of fluid text
2. Is less expensive
3. Requires no instruction in computer use
4. Adapts to instructor's goals
5. Provides focus for collaboration
6. Creates powerful visual impact
7. Alters definition of revision

Visual #2

Experimental Questions

Does the modelling of collaborative revision on the computer in the classroom lead to

1. better student papers?

2. changes in the student's writing process?

3. peer collaboration?

Visual #3

Data Sources

1. Paper Scores: Instructor and Reader
2. Questionnaires at beginning and end
3. Student self-reports
4. Profiles
   - Verbal Aptitude
   - Academic Achievement
   - Learning Style Preferences
   - Cognitive and Affective Personality Profiles
5. Student course evaluations
6. Instructors' observations

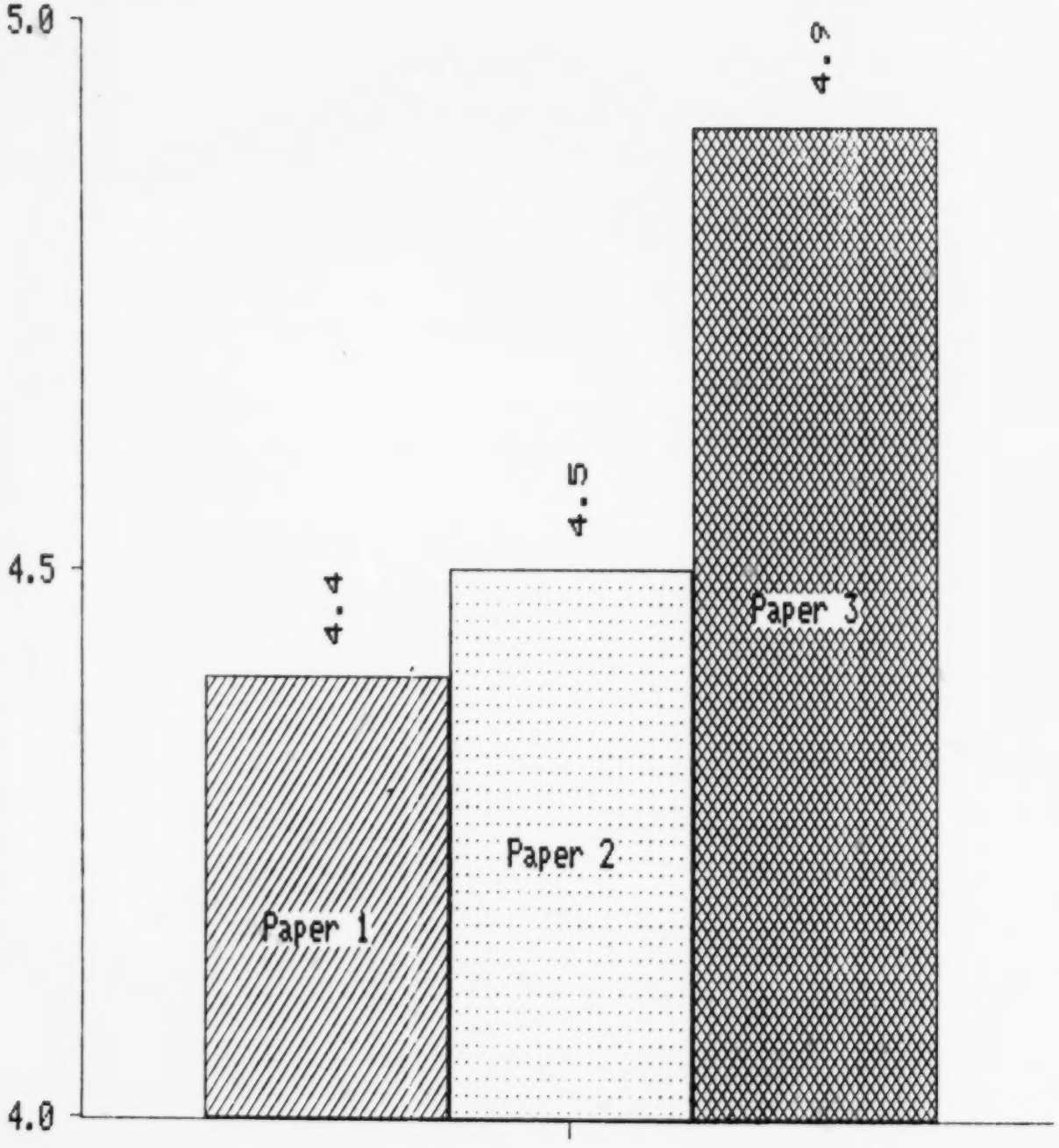
Visual #4

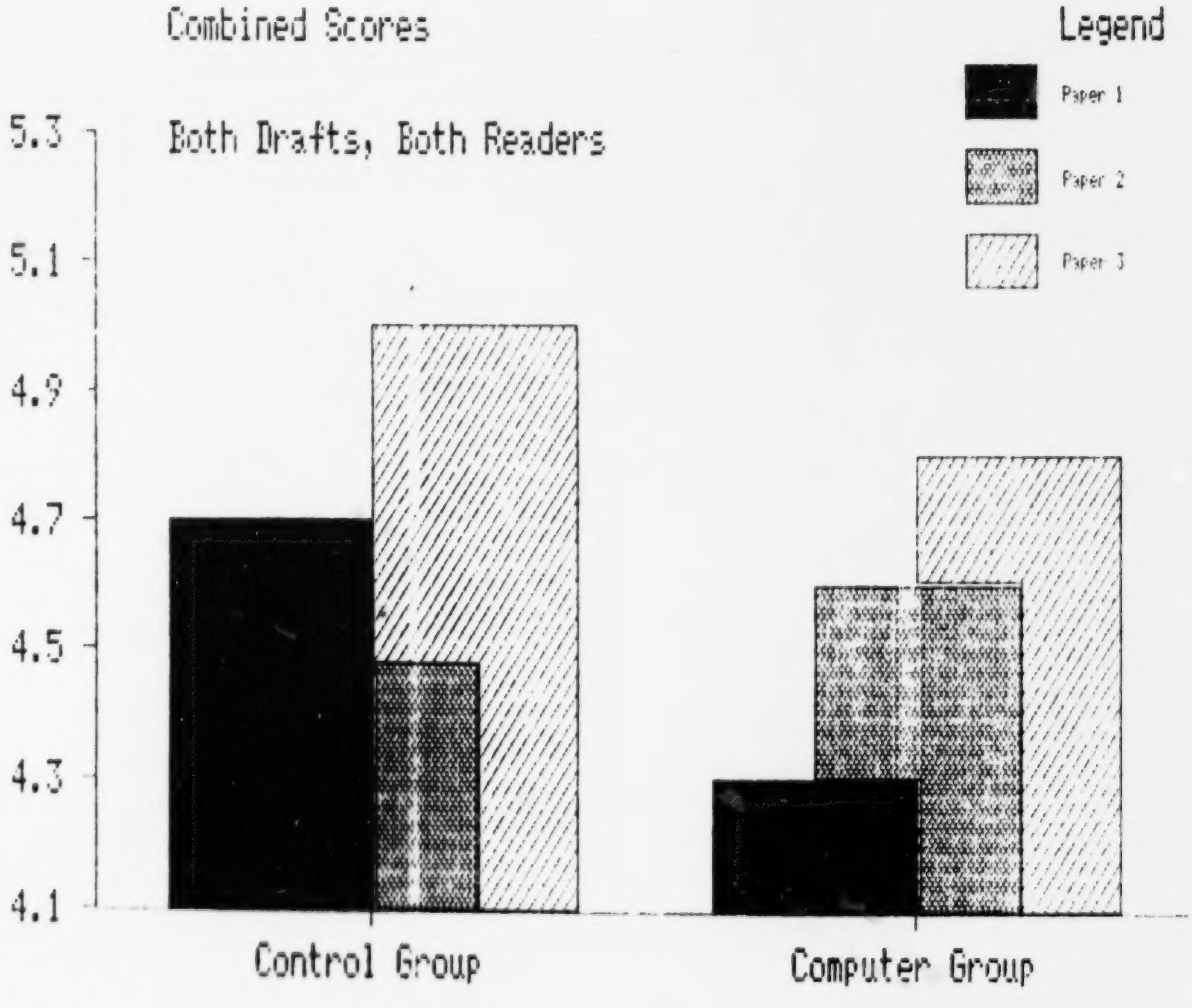
CONTAMINATING FACTORS

1. written comments on student papers
2. lack of common text for critiques
3. limited number of revision sessions
4. second session doldrums
5. unbalanced groups

Visual #5

Both Groups, Both Drafts, Both Readers




Combined Scores
Both Drafts, Both Readers
Legend
Paper 1
Paper 2
Paper 3
5.3
5.1
4.9
4.7
4.5
4.3
4.1
Control Group
Computer Group

Experimentally Validated Conclusions

1. Experimental teaching is effective.

2. Modelling of collaborative revision on computer is an effective method for improving student writing.

Impressionistic Conclusions

The modelling of collaborative revision on the computer in the classroom may help students

1. improve more in their writing of papers;

2. raise their consciousness about the composing process;

3. lead to a more radical definition of revision.

Visual #8